DOCUMENT RESUME

ED 071 161 EA 004 662

AUTHOR	Hull, Ray; Hansen, John
TITLE	Classroom Supervision and Informal Analysis of Behavior. A Manual for Supervision.
INSTITUTION	Oregon School Study Council, Eugene.
REPORT NO	OSSC-Bull-Vol-16-No-2
PUB DATE	Oct 72
NOTE	53p.
AVAILABLE FROM	Oregon School Study Council, College of Education, University of Oregon, Eugene, Oregon 97403 ($2.50)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Classroom Observation Techniques; Educational Accountability; Effective Teaching; Feedback; Teacher Administrator Relationship; Teacher Behavior; *Teacher Evaluation; *Teacher Improvement; *Teacher Supervision; Teaching Methods; *Teaching Skills

ABSTRACT

This manual for supervision addresses itself to those with responsibility for helping teachers develop into skilled professionals through use of a rational plan of feedback and assistance. It describes the supervision cycle and outline simple and practical techniques to collect effective data that will assist the classroom teacher. The manual has been designed to yield maximum data with a requirement of minimum expertise. It rests on the identification of objectives by the teacher and by the observer. (Author)

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

RESEARCH DEVELOPMENT SERVICE

OREGON SCHOOL STUDY COUNCIL

BULLETIN

EA 004 662

OREGON SCHOOL STUDY COUNCIL
College of Education
University of Oregon, Eugene, Oregon

CLASSROOM SUPERVISION
AND
INFORMAL ANALYSIS OF BEHAVIOR

by

Ray Bull
with
John Hansen

Vol. 16, No. 2 October, 1972

FILMED FROM BEST AVAILABLE COPY

ED 071161

CLASSROOM SUPERVISION AND INFORMAL ANALYSIS OF BEHAVIOR

A Manual for Supervision

by

Ray Hull
with
John Hansen

University of Oregon
Eugene, Oregon

Individual Copy Price - $2.50

Acknowledgment is here given to John Hansen, currently serving as specialist for middle schools, attached to the U. S. Embassy and the Brazilian Ministry of Education, for his work in preparing portions of the material presented in the section of this manual devoted to "Collecting Data."

The material in this manual is not to be reproduced without the written permission of the author.

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY

Gary Hull / Author

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

FOREWORD

The act of teaching normally is a private activity in that it usually consists of one teacher within the walls of one classroom. Operating out of view of their peers, teachers tend to be denied access to feedback which could help them develop into the skilled professionals they wish to be. As a result, each teacher's style usually develops without the benefit of objective data which could facilitate better decisions about teaching.

This manual for supervision by Dr. Ray Bull addresses itself to everyone with any responsibility for helping teachers by a rational plan of feedback and assistance. It clearly describes the supervision cycle and outlines simple and practical techniques to collect effective data that will assist the classroom teacher. This manual has been designed to yield maximum data with a requirement of minimum expertise. It rests on the identification of objectives by the teacher and by the observer.

Dr. Bull welcomes questions, reactions, and suggestions to this material. He can be contacted through the College of Education at the University of Oregon.

Kenneth A. Erickson, Executive Secretary
Oregon School Study Council

TABLE OF CONTENTS

	Page
THE PROCESS OF SUPERVISION	1
THE SUPERVISION CYCLE	3
The Pre-Conference	4
Planning for the Observation	5
The Observation	6
Planning for the Post Conference	6
The Post Conference	8
Summary	10
COLLECTING DATA	12
Verbatim Analysis	13
Total Verbatim	13
Selective Verbatim	15
Analysis of Teacher Questions	15
Analysis of Teacher Responses	19
Analysis of Teacher Statements	22
Analysis of Student Verbal Behaviors	25
Task Analysis	26
Coding Student Behavior	27
Recording of Data	30
Interpretation of Data	31
Pattern Analysis	36
Analysis of Classroom Discussion	36
Sequence of Participation	37
Other Applications of Pattern Analysis of Discussion	39
Classroom Movement Patterns	41
Summary	42
APPENDIX	44

LIST OF EXHIBITS

Exhibit		Page
1	Data Sheet: At Task Analysis	32
2	Data Sheet: At Task Analysis	33
3	At Task: Summary Data Sheet	35
4	Discussion Pattern	38
5	Teacher Movement	43

THE PROCESS OF SUPERVISION

One way to look at instruction is to view it as the process of making decisions relating to and growing out of the teacher's perception of the teaching-learning act. These decisions fall along a continuum from those occurring in response to immediate classroom situations to those which deal with such long-range factors as philosophy and goals. The teacher at any one time may be solving problems such as "How will I answer this question?" or, "How will I respond to this student?" and at another time may ask, "What kinds of behaviors will I expect of my students as a result of this year of school?" Within this range are many other kinds of decisions that are intermediate in nature. For example, "How will I introduce my next unit of study?" or "What behaviors will I look for from this student over the next few days?" Out of this process of decision making will emerge the teaching style of the individual, a more or less consistent way of looking at and responding to those questions and problems faced by teachers in the identification, development, and presentation of learning experiences.

If teaching is viewed as the product of a decision-making process then it is important to consider the basis on which these decisions are made. First, they are made on the basis of knowledge. What the teacher knows about the children, about learning, about the subject matter, most certainly influences all kinds of decisions that are made. Second, decisions are made on the basis of experience--the experiences of others to some extent but more often on the basis of personal experience as a teacher and as a learner. Of course, it is not knowledge or experience operating independently that leads to decisions, it is the integration and interaction of both that causes us to respond as we do to any given situation.

Knowledge and experience are highly individual phenomena that grow out of a person's view of his surroundings. Any given event may be viewed quite

differently and have different meaning for any number of observers. This is true because people view their environment selectively. That is, what they see is influenced by the nature and degree of their involvement and by their past experiences. For the teacher this is true of events in the classroom as it is for all realms of experience. Different people in the classroom may perceive events in the classroom differently. It is in response to this situation that supervision may serve to assist teachers in their classes. Each teacher is able to achieve only one view of the classroom yet it is from this experience that most decisions relating to the teaching act will be made. The role of the supervisor is that of broadening the teacher's view of the classroom by providing an additional set of experiences to work with and thereby facilitating the process of making decisions about teaching behavior.

It should be emphasized that the role of the supervisor is not to make decisions for or about the classroom teacher but to enhance and broaden the experience of the teacher in order to allow for more effective decision making. The teacher, during class activities, is receiving constant feedback and making a number of rather immediate decisions based on that feedback. The teacher will also make a number of longer-range decisions that will be influenced by this same feedback. Supervision can assist in this decision-making process by providing feedback in addition to that perceived by the teacher and also by helping organize that feedback into a more usable form. This is possible because the supervisor has developed special skills in observing the teacher and pupil behavior and because the supervisor may view the class from a different vantage point--one that is free of physical and emotional involvement.

The preceding paragraphs have attempted to briefly describe and provide a rationale for the role of the supervisor in the classroom. In the sections to follow, a cycle of supervision will be proposed and a number of techniques for providing feedback will be discussed.

THE SUPERVISION CYCLE

As emphasized in the previous section, the supervisor does not make decisions regarding classroom teacher behavior but instead facilitates the making of decisions by the teacher. It follows that the role of the supervisor is not to tell the teacher how to teach, but to help the teacher accomplish whatever goals have been established. It is probable that as a result of interaction between the supervisor and the teacher, modifications of goals may occur, but this must be a decision made by the teacher--not by the supervisor. Remember that decisions made by others seldom have lasting influence.

In keeping with the above rationale, the supervisory cycle must logically begin with establishment of objectives. Generally, a supervisor spends some time prior to an observation period with the teacher and either helps in the formation of objectives or identifies those objectives already developed by the teacher. This pre-conference, as it may be called, is then followed by an observation period in which the supervisor collects information or data to share with the teacher. The final stage of the cycle occurs when the supervisor discusses the observation with the teacher, provides and helps organize information collected, and assists the teacher in making decisions about future teaching behaviors. In this simple form the cycle is as follows:

Pre-Conference

Observation

Post Conference

It would be valuable at this point to consider each stage of the supervision cycle in some further detail.

The Pre-Conference

The essence of supervision is for the supervisor to assist the classroom teacher in accomplishing those things that the teacher has identified as long-range and short-range objectives. Therefore, in order to carry out the function of supervision the supervisor must know what the objectives of the teacher are. In terms of a single observation, the supervisor needs to be aware of the objectives for that lesson or period of time. Over an extended period the supervisor needs to know the long-range objectives of the teacher as well. He needs to be able to help the teacher ask, "Will the methods of instruction I employ and the subject matter I select lead to the objectives I have identified?" "If so, why?" "If not, why not?" A reminder--it is not in the best interest of the teacher for the supervisor to pose the question or to answer it. The supervisor must lead the teacher to want to look at the effectiveness of what is done and then provide information that will help develop an answer.

As stated above, if the role of the supervisor is to facilitate the achievement of the teacher's objectives, he must be aware of those objectives. Therefore, a primary task to be accomplished during the pre-conference is the identification of objectives. This may be done by examination of lesson plans or by conference with the teacher. In either case, the supervisor should ask the teacher to clarify the objectives so that both teacher and supervisor understand exactly what is to occur. If the teacher has not been careful in the identification of objectives, the supervisor might assist in this task by causing the teacher to examine in greater detail what she is trying to accomplish. Once the objectives are identified, all supervision activities should be in relation to those objectives. That is not to say that the supervisor should not help in the establishment of certain objectives--it does say that once objectives are established they should provide the framework for the remainder of the supervision cycle.

It is very threatening to teachers, especially when new or inexperienced, to have another adult observe them as they teach. This is

especially true as most people tend to perceive the role of the supervisor as that of evaluator--someone who is going to rate them as good or bad, who is going to make value judgments regarding their teaching performance. If the teacher views the presence of the supervisor as a threat then the supervisor will not observe a "normal" situation and will not be able to work with the teacher to bring about the improvement of instruction. To avoid this situation the supervisor must give attention during the pre-conference to reducing threat and to building a trust relationship. The teacher needs to feel safe with the supervisor, to know that it is the teaching that will be looked at and not the teacher, to feel that she and the supervisor are working as a team toward the same objective, that being the improvement of instruction.

A third phase of the pre-conference should be to give the teacher an opportunity to help plan the observation activity. The teacher should be asked to identify areas of particular concern and types of information that would be of special value. The teacher needs to feel a part of the supervision cycle, not the object of it. Through cooperative planning trust is generated, anxiety is reduced, and the teacher becomes an integral part of the supervision process.

Planning for the Observation

Following the pre-conference and the cooperative planning efforts of the teacher and supervisor, the supervisor needs to review the results of the pre-conference and make decisions regarding the conduct of the observation period. How much time should be allowed? What kinds of information should be collected? What materials will be needed? What were the real or most important objectives of the teacher? What kind of teaching problems might be evident? The supervisor must develop objectives and a strategy for the observation just as the teacher must for the presentation of a lesson. To be most effective, the supervisor needs to have a purpose, a definite reason for wanting to gather information about a particular instructional activity.

The Observation

During the observation period itself, the role of the supervisor or other observer is that of collecting objective information--data--about the instructional process. Any number of techniques may be used and some useful methods will be described later in this manual. Regardless of the method used to collect data, the important factor is that the data be as objective as possible and that it provide information that can later be used to make decisions about the teaching behavior of the teacher being observed. The data collected are essentially feedback which the teacher may consider along with all the additional feedback that is received during any instructional activity (e.g., student response, quality and quantity of student work, personal feelings, etc.). It is one more source of information that may be used to make decisions regarding the teaching-learning act.

It should be mentioned that just as lesson plans must sometimes be changed at the last moment, so will there arise occasions on which the planned strategy for an observation period will be altered. An unexpected happening, a special behavior problem, an event outside of class, may cause the setting to be enough different that the initial plan for collecting data is no longer appropriate. Occasionally the observer's experience and intuition in combination with an overview of the observational setting will provide the basis for a change in plans.

Planning for the Post Conference

The initial task of the observer following the observation period is to begin to organize and analyze the data that has been collected. What are the most apparent patterns of behavior of the teacher? Of the students? How does the data relate to the teacher's objectives? Which feedback is most important in the view of the supervisor? Which feedback is likely to be most important to the teacher? What kind of feedback has been generated

that may be used effectively by the supervisor and the teacher as a basis for decisions leading to the improvement of teaching?

The collection and interpretation of the data will depend in part on the experience and perceptions of the supervisor carrying out the observation. This will be reflected in the type of data that is collected initially, in the selection of data for presentation to the teacher, and ultimately in the kinds of decisions the teacher will make. This cannot be avoided nor should it be. Supervisors are generally selected on the basis of experience and demonstrated skill and it is hoped that their understanding and ability will serve to help others attain a similar degree of proficiency. What should be avoided is the tendency to tell others how to do it. The supervisor should view his function as one of facilitating the self-improvement of the teacher.

Having analyzed and organized data, the supervisor must determine how these data are to be presented to the teacher and what should be accomplished by joint (supervisor and teacher) review of the information. There must be an objective for the conference and a strategy for conducting the conference so that the objective may be attained.

In planning for the conference the supervisor might consider the following:

1. What is the primary objective for this conference?
2. What are some secondary objectives?
3. What should the focus of the conference be?
4. How will the data be related to the objectives and concerns identified by the teacher?
5. What problem areas were identified by observation and the analysis of the data?
6. Which problems are short-range and which are long-range in nature?
7. Which problems can be dealt with within the context of this conference, which should be postponed for a later conference, and which should be introduced now but considered over a more extended period of time?
8. In what sequence should the data or topics be discussed and how much time should be allowed for each?
9. What suggestions for future activities relating to either teaching or supervision do you intend to make?

10. How will the teacher become involved in the identification of problems and in the resulting problem-solving and decision-making process?
11. What kinds of teacher behavior or change in teacher behavior should occur as a result of this conference?

The answer to any of the above will, of course, depend on the kind of relationship developed between the supervisor and the teacher, on their respective personalities and value systems, on each one's perception of the teaching act and the conference, and on the skill of the supervisor in analyzing and presenting data.

The Post Conference

The post conference is a learning situation. Data will be analyzed, decisions will be made, and behavior will change. It is the skill of the supervisor in working in the conference setting that will determine how effective this learning will be. If the supervisor is skillful, the teacher will examine the data, make decisions, and the resulting changes in behavior will have some permanence. With this in mind, it is important to examine briefly some factors contributing to a successful teacher-supervisor conference.

1. A trust relationship will promote learning. A teacher is very often uncomfortable about working with a supervisor, especially if the supervisor is perceived as one who will make value judgments regarding the teacher as an individual. This discomfort will very likely be carried over to the conference setting. As long as the teacher is anxious about the relationship to the supervisor and the role of the supervisor, the effectiveness of the conference will be reduced. At the outset the supervisor must give attention to reducing this feeling of anxiety and to the establishment or reinforcement of the trust relationship.
2. Involvement is necessary for motivation and learning. Only when people are actively involved will learning have any degree

of permanence. If the supervisor uses the conference as an opportunity to "tell" the teacher about her teaching then the most that can be hoped for in terms of changing behavior is compliance. If the teacher is actively involved in examining data, assessing behavior (teacher and student), and decision making, there will be greater motivation for real change.

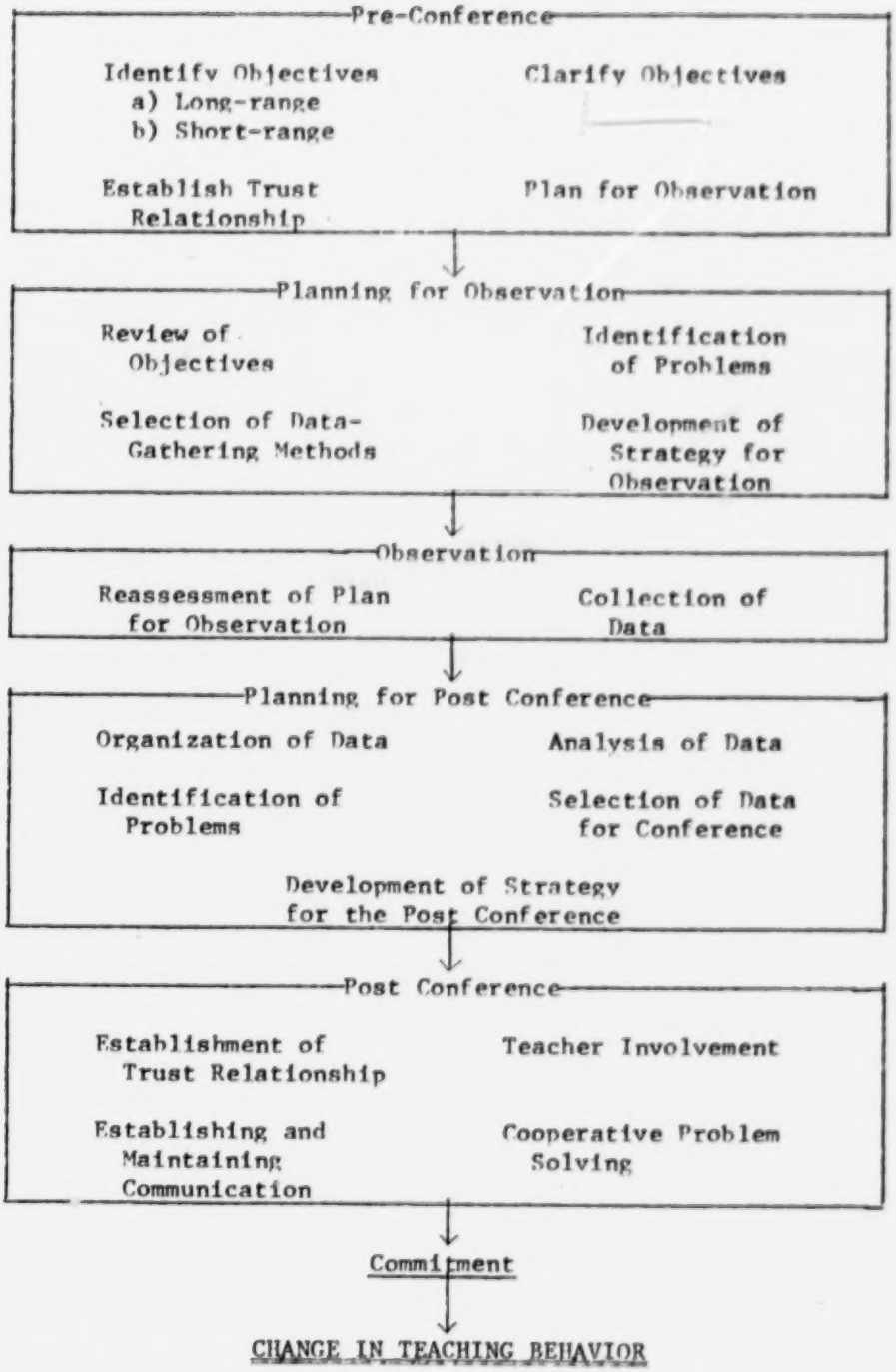
3. Open channels of communication are essential. In the conference setting, the supervisor must be sensitive to all the messages, verbal and nonverbal, that are being sent and received. The supervisor must be careful to employ such basic skills as paraphrasing (testing understanding by rephrasing another's comments in his, the supervisor's, own words), perception checking (verbally checking perceptions of feelings), reporting behavior (identifying behavior to which the supervisor is responding), reporting feelings (identifying the feelings of the supervisor so that the teacher may better understand his behavior), etc. Without open communication trust is difficult to establish and learning is seriously impaired.
4. Problem-solving techniques should be employed. The primary purpose of the conference is to examine problems related to the teaching act and to arrive at some possible alternate behaviors that might be more effective. Problem solving may take place in an organized manner that leads logically and effectively from identification of the problem to development of possible solutions or it may proceed in an essentially hit-and-miss fashion with little of real value being accomplished. It is the responsibility of the supervisor to see that sound techniques are employed and that viable alternatives are identified.
5. Commitment is basic to change. People do those things they feel committed to do--good intentions alone seldom suffice. Once alternative behaviors are identified by the supervisor and teacher, there needs to be a commitment to those behaviors. The supervisor needs to elicit this commitment and to reinforce it

through future contacts. It is important that the supervisor recognize that commitment is a form of goal-setting and that unattainable goals are frustrating. It is true that the teacher needs to be committed to some ideals that may not be attainable, or even totally definable, but for purposes of effecting change in behavior, goals must represent attainable increments of change leading to a visible end-product. Commitment will most often be in the form of "Tomorrow I am going to try this idea."

The above five points present a structure for a conference that can serve as a guide in developing strategy. There are three basic factors within this structure. The first is establishing a trust relationship, the second, cooperative problem solving, and the third, commitment. Over all is the need for open communication and skill in interpersonal relations.

Summary

The preceding section was introduced with a simplified diagram of a supervision cycle. To summarize the section the cycle is again presented diagrammatically, but in a manner more representative of the total cycle.


Pre-Conference
Identify Objectives
a) Long-range
b) Short-range
Clarify Objectives
Establish Trust Relationship
Plan for Observation
Planning for Observation
Review of Objectives
Identification of Problems
Selection of Data-Gathering Methods
Development of Strategy for Observation
Observation
Reassessment of Plan for Observation
Collection of Data
Planning for Post Conference
Organization of Data
Analysis of Data
Identification of Problems
Selection of Data for Conference
Development of Strategy for the Post Conference
Post Conference
Establishment of Trust Relationship
Teacher Involvement
Establishing and Maintaining Communication
Cooperative Problem Solving
Commitment
CHANGE IN TEACHING BEHAVIOR

COLLECTING DATA

The objective of the observation phase of the supervision cycle is the collection of data upon which decisions regarding teacher behavior can later be made. In order to accomplish this objective, the supervisor must be able to record the events that occur during the observation in a way that will allow for later inspection and analysis. There are a number of techniques available for use in recording this type of data. Generally, they are based on some type of coding system that enables the observer to maintain a record of events without recording the total range of behavior, verbal and nonverbal, that occurs in the classroom. Some of these coding systems have become quite formalized and require considerable practice and knowledge before they can be used effectively. These systems are usually used by a supervisor or other observer only after a period of special training in the use of a particular system. Perhaps the best known of the "formal" systems is one developed by Ned Flanders and known as Flanders System of Interaction Analysis. In addition to the "formal" systems for recording and analysis of classroom behavior, there are a number of "informal" techniques which are more flexible and require much less training and practice. They, of course, lack some of the consistency and reliability generated by the highly structured "formal" systems, but are perfectly adequate for supervisory purposes and can provide a wide range of valuable information regarding classroom behavior.

Informal systems of analysis constitute a variety of data-gathering techniques which are general in basic form and which may be employed by an observer to satisfy particular data needs in a multitude of classroom situations. The nature or design of these systems depends entirely upon the data needs of a given situation and may represent an adaptation or modification of an existing "formal" system or may be entirely original. In this section, two informal techniques, verbatim and task analysis, will be examined in some detail and several additional systems will be described briefly as further examples of the types of information or data that may be gathered using informal systems of analysis.

Verbatim Analysis

Verbatim analysis is based on the recording in some way of part or all of the verbal behavior in the classroom. This recording may be done electronically by an audio or video-tape recorder (when the latter is available) or by an observer using paper and pencil. Written verbatim may be a total record of verbal interaction in the classroom or may be a record of only selected bits or pieces of the verbal behavior of teachers and students.

The use of electronic means of collecting data has both advantages and drawbacks. The principal advantage is that it is possible to preserve a totally accurate record of actual classroom behavior. The problems arise in the availability and expense of the equipment and the analysis of data. To simply listen to a tape recording without some systematic analysis of the interaction is of limited value. However, such analysis is possible and when used properly, electronic reproduction of classroom interaction can be an effective technique for examining classroom behavior.

Total Verbatim

Total verbatim analysis using paper and pencil means is not as much of a physical impossibility as one would surmise. Aided by individually devised "shorthands," a good memory, classroom pauses, and repetition, an observer is often able to reproduce a lengthy verbal exchange. Even when gaps appear in the verbatim transcript, however, enough data can be gathered to be useful as indicators of recurring behaviors, problems, patterns, or sequencing. Some devices that the authors have found helpful include:

1. writing phonetically (c-see, r-are, or-our, u-you) and with symbols (T-teacher, x-ask, w-with)
2. using abbreviations extensively (wd-would, ppl-people, sal-shall, tch-teach)
3. writing main ideas of each interaction and relying upon your memory to fill in the rest (using . . . or ---)

4. using numbers, symbols, or position on the page to indicate who is talking, time sequences, and pauses.

An example of total verbatim analysis is the following portion of a first-grade mathematics lesson. Note that in this recording of data, the observer distinguished between teacher and student comment by using the symbols T and S, but did not attempt to differentiate between students.

First-Grade Mathematics

S: One, two, three, four.
T: Did he take out four, Karen?
S: Yes.
T: He certainly did. He knows his number four, doesn't he? Now we're going to try something with the circles. And let's see if I can get you just a little bit mixed up. Let's leave all of the circles pink this morning and then we can try something with them. All right, how many do I have now?
S: Three.
T: How many do I have now?
S: Four.
T: How many do I have now?
S: Four.
T: This time?
S: Four, four, four.
T: Did it make any difference where I put the circles?
S: No.
T: We still had how many? Robert Walker?
S: Four.
T: Four. This time I'm going to try to catch you. Are you ready?
S: Yes.
T: All set? All right, how many arms do you have, Robert Walker?
S: Two.
T: Two arms. How many boys are you?
S: One.
T: One boy has two arms. All right, how many arms will two boys have, Robert?
S: Four.
T: Good for you. How many legs do you have, Gail?
S: Two.
T: How many legs will two girls have?
S: Four.
T: Kathy, how many legs does a chair have?
S: Four.
T: How do you know? How do you know that a chair has four?
S: So, so it could stand.

T: It has to have the legs where?
S: Underneath.
T: Yes, where else?
S: I know.
T: Where?
S: On each side.
T: On each side, doesn't it? And there's another name for that side; it's not a side but it's what? Where is it that the legs are?
S: In the back.
T: Well, I'm thinking of another word that starts like come.
S: Corner.
T: Corner, they're on the corner. How many corners does a chair have?
S: Four.
T: Four corners, and that's where the legs have to be. All right, how many noses do you have? Terry?

Actual analysis of the data would depend on the objectives of the teacher and the observer. If, however, it is assumed that the objective of the teacher was to assess the students' understanding of certain number concepts then it would appear that the objective had been accomplished.

Selective Verbatim

Selective verbatim analysis, the most useful of the informal systems, was developed in response to two weaknesses of the total verbatim process--the physical limitations of taking total verbatim and the fact that once recurring behaviors, patterns, or problems are identified, only data about those "selected" activities may be needed (e.g., if the problem relates to questioning, the observer need only record and analyze questions). The remainder of this section will focus upon selective verbatim analysis.

Analysis of teacher questions. A number of investigations have demonstrated the importance of teacher verbal behavior in determining the nature of classroom interaction. Of the various verbal behaviors in which a teacher engages, the behavior most critically related to student performance is that of asking questions. Therefore, a valuable collection of data could be compiled by recording, verbatim, the questions a teacher asks. This recording can be done by the teacher herself from an audio tape or it can be done by an observer--in either case, every question the teacher asks

during a given time period or lesson is written as it is stated. A question is defined as "any interrogative statement calling for a verbal response."

Questions are defined as requiring a verbal response because most interrogative statements made in a classroom do not require a verbal response. In a recent study by one of the authors, 56 percent of the interrogative statements the teacher made did not call for a verbal response. We need not wonder why students do not answer our questions when we are teaching them, by routine, that questions more often than not are not meant to be answered. How often do teachers ask, "Are you ready to proceed?", "Wasn't that a good idea?", "Will you close the window?", "May I sit down?", or "When are you going to be a good boy?", never expecting a verbal response.

After the questions are recorded, the observer and teacher should review the data and analyze the questioning strategies. Of primary interest should be the cognitive nature of questions as this is the most important dimension in determining the intellectual level of student responses. Students presented questions calling only for recall of known data tend to think in terms of the recall of learned facts. Students presented questions calling for evaluative judgments will think in terms of evaluation, providing prerequisite cognitive behaviors have been accomplished. Thus, it is mandatory that the teacher be aware of the level of cognitive performance she seeks from her students and the degree to which the actual questions asked reflect that desire. For example, a teacher might experience difficulty in leading students to develop generalizations. She may find, upon examination of the data (verbatim record of questions), that the reason for this difficulty is that she is not asking questions calling for this type of thought or that she is not providing for the accomplishment of those cognitive behaviors prerequisite to the process of generalization.

There are a number of systems of classification by which questions may be categorized. The system employed, of course, is determined by the needs of the teacher in relation to the objectives of the activity being

observed. A classification system commonly used is one derived from Bloom, et al., The Taxonomy of Educational Objectives, Cognitive Domain. (A summary of this taxonomy is included in the Appendix of this manual.) Norris Sanders developed a very useful adaptation of this taxonomy especially for question analysis in his paperback, Classroom Questions, What Kinds? Systems of question analysis based upon Bloom's work divide the thinking tasks into knowledge, comprehension, application, analysis, synthesis, and evaluation. A different system, developed by Gallagher and Aeschner, categorizes questions as descriptive, explanation, evaluative-judgment, evaluative-criteria, and expansive based on Guilford's categories of thought--cognitive-memory, convergent, divergent, and evaluation. Gallagher added an additional dimension when he suggested that the categories could each be further divided into data, concept, and generalization groupings as well as those relating to skills and content. A simple classification system might be based on the extent to which the questions are habitual, ask for data, concepts, ideas, interrelationships, and application, or contain multiple requests. The sophistication or complexity of the selected system for categorization of questions is not of primary importance. Of course, the more complex systems may ultimately yield more data, but unless the data are understandable and immediately usable, they seldom realize their true value. The system used to classify the cognitive nature of questions, in the last analysis, must be one which has meaning for both the teacher and observer, which gathers data related to the teacher's needs, and which uses an agreed-upon definition of terms.

Delivery of questions also affects the nature of student involvement in the teaching-learning process. A question that is designed to elicit a given cognitive response may in fact have an entirely different effect because of the manner in which it is presented. For example, a teacher may habitually rephrase questions to stimulate or facilitate, she thinks, student response. Often the end result of this process is to change the nature of the question entirely. Consider the following sequence of questions which were asked all at once without anything between except pauses:

1. If the climate of the earth were to become colder, what changes in animal and plant life would you expect to see?
2. Does the environment influence the existence of plants and animals?
3. Would living things change if the climate were to change?
4. How do living things adapt to a changing environment?

In this sequence the initial question asked the students to formulate a hypothesis based on their knowledge of climate, environment, natural selection, and adaptation. The last question, the one the students answered, while still on the topic is only asking for an explanation of the concept of adaptation--providing the phenomenon is understood. Both questions are of value but, if the original question indicates the intent of the teacher in asking the question, then the remaining questions in the sequence are not appropriate, as asked, to the desired outcome. Many times, it is a teacher's fear of the silence that follows her difficult questions that ultimately prevents students from using the classroom as a forum for hypothesizing and generalizing. This type of problem may become evident from interpretation of verbatim data.

A sequence of questions as above may serve to alter the focus of the discussion as well as change the cognitive level. In the above example, the focus remained on adaptation even though the cognitive behavior solicited varied from formulation of hypothesis to explanation. In another sequence, however, the focus might change while the activity remains at the same cognitive level or both the cognitive nature and the focus of the question might be altered. The following series of questions were presented in rapid succession, not allowing for student response, in a middle school history class.

1. What was one of the first reforms at the national level?
2. In a big city you need what to run a city like New York City?
3. What is needed to run a city?
4. How is New York City run in daily life?
5. How many officials are there in New York City?

It is easy to see that both the focus of the discussion and the cognitive nature of the questions vary considerably. One would question if the final

question stimulated the verbal behavior which was intended to be elicited by the initial question in the sequence.

A related phenomenon is that of the multiple question. Multiple questions result when a teacher phrases her questions in such a way as to ask several questions at once and require a series of responses. For example, "What economic conditions tend to cause unemployment, what is their origin, and where can they be found today?" Again if the result matches the intent, the technique is appropriate to the rationale. Teachers need to be aware of their use of questions and their appropriateness within a given sequence of learning experiences.

The delivery of a question may cue the student as to the expected response or behavior. If this is the intent of the teacher, then the delivery is effective; but if the teacher desires that the student be solely responsible for a verbalization, then the delivery of cues, which may be quite unintentional, is in opposition to the teacher objective. Again, this type of problem is quite identifiable through skillful analysis of selective verbatim data.

Analysis of teacher responses. Except during lessons which are dominated by lecture or student presentations, the typical patterns of interaction involve teacher statements, questions, and responses. One of these dimensions that is seldom subjected to critical analysis is the teacher response--those words or phrases that immediately follow a student's contribution. Are these responses habitual, do they praise, are they repetitious, do they amplify student remarks, or do they ignore the previous statement? This dimension can be observed simply by writing down the first five words (selected arbitrarily) or maybe the first phrase a teacher makes following a student contribution. It could also be observed by recording statements made in response to students which fit a preselected category, i.e., an already identified area of concern such as praise, repetition, habitual, or probing responses. Following is a record of a teacher's habitual remarks delivered during a class discussion in social studies. It seems evident that this teacher is relying heavily on cliches and slang that may have much more meaning to him than it does to

his students. In the second example, a different kind of response pattern is evident. In this lesson the teacher responds to each student verbalization with a new question. The value of the technique as used by this teacher could be assessed only in terms of the objective of the lesson. It might prove interesting to subject the questions to analysis of cognitive level as described in the previous section.

Selective Verbatim: Habitual Remarks

I'll try to keep this short.
Okay. All right.
I'll have to hone up (greenbacks).
I'm not particularly up on that.
I'm just not sure.
. . . stuff like that.
. . . things like this.
. . . things like this. (peanuts)
. . . and all of this.
. . . or anything like this. (disenfranchise)
. . . and such things. (Solid South)
. . . or any of this. (due process)
. . . and things like this. (Alaska)
. . . and all of this. (KKK)

Selective Verbatim: Teacher Response, Elementary

Betty, will you give us a short summary of the Split Cherry Tree?
. . . Betty, what happened?
Umm. Good summary of the story, Chris.
What were your ideas on the story? Like it? Not? Why?
Did you like the people that were in it?
What did you think about the boy?
What did you think about the father?
Do you like the ending of the story?
Did someone not like the story?
The placement of stress? Characters, plot, setting?
OK, would you like to tell us why?
How many characters? OK, who?
What part did these play in the story?
What sort of conflict would we look for?
Chris, did you have something to add?
What was the conflict in this? What happened after?
What caused the conflict? What is different about the background?
Do you think there was hasty judgment?

A final example of verbatim recording of teacher response is this data collected during a discussion in a university class. The observer has recorded the first few words of each response.

Selective Verbatim: Teacher Response

Well, it isn't bad to explore . . .
OK. Well, let's see then, let's say . . .
Geographical, OK.
Very good, then we can say that . . .
OK, so maybe we could put this under . . .
OK, that would be another . . .
Excellent, OK.
That's great, yes, real good consideration, they're saying that . . .
OK, all right, let's see then, let's put down . . .
OK.
All right, let's see now, we have--no, we don't . . .
OK, do you want to say a little more why that's important?
Like for instance you think that maybe . . .
OK, now what about teacher bias?
I see, OK, you have to examine your own thinking . . .
Right, and I think maybe that's what he's getting at.
OK, yes, that would be the content sort of . . . (extended teacher talk)
Awareness, understanding, OK.
OK, then your objective is to . . .
Right, OK, that would be one of the things . . .

In this sequence of responses the teacher has been careful to reinforce each student statement. He has also gone on in a number of instances to make further comments on the student's contribution. A pattern emerges of a) habitual use of the phrase OK, b) reinforcement of student contribution, and c) expansion on student ideas. The effectiveness, or lack of effectiveness, depends on the teacher's objectives for the discussion. If an objective was to employ this type of pattern of interaction, then the teacher was successful in accomplishing that task.

Another analysis which often proves to be quite revealing is one which compares responses to different individuals in the classroom. If there is an observable difference in the way teachers respond to certain children, no protestations to the contrary by the teacher will outweigh the "data" the students get each day. Many teachers unknowingly respond differently to different children and under different circumstances. Very often the interpretation given to this behavior by students is one of rejection. If this problem were extended to include response to children of different social, economic, and racial groups, the significance of this kind of data becomes highly evident.

Analysis of teacher statements. Contrary to College of Education, school faculty room, and professional organization allegations concerning inductive student-centered teaching and learning, a large proportion of teachers talk in direct, i.e., telling, fashion more than half of the time that they talk. Teachers in many schools are still benevolent (hopefully) dictators that hold tight control over the content, the process, and the materials being considered. While most teachers look forward to the day when learning rather than teaching is the focus of the school, any discussion of informal means of analyzing classroom verbal behavior in 1971 would be incomplete without devices to record and analyze teacher statements.

Teachers probably always will give directions, make focus statements, lecture, manage and control behavior, and summarize. Each of these categories can be observed, selectively, simply by writing down what the observer hears that he would assign to that category. The lecture category is most easily observed using audio or video equipment when the activity is extended, but revealing data can be obtained by recording just the short opinions, allegations, and generalizations teachers make during the course of classroom discussions. The following examples contain verbatim recordings of teacher control and management statements--the authors are sure that several inferences can be made after only a superficial analysis of the data illustrated. As is true with all of the other examples given in this chapter, these are transcripts of the verbal behavior of certified teachers taken either in their classrooms or from electronic reproductions--lest any reader assign theses behaviors only to the student teacher, the intern, or the beginning teacher.

Activity

	1.	10:19 Berta!
	2.	10:20 Linda, please listen.
	3.	10:21 Roberta, I don't want to hear anything more out of you.
Return-	4.	10:21 Bill, come back here right now.
ing	5.	10:23 Bill, I didn't ask for you to answer.
Papers	6.	10:24 Shhh! Just raise your hand.
	7.	10:24 Would you please be quiet (class).

---

8. 10:26 Answer by raising your hand.
9. 10:27 You don't need to ask??
10. 10:27 Molly, turn around.
11. 10:28 Molly, wait until you are called on before you talk.
12. 10:29 Bill, you didn't have permission to say anything.
13. 10:29 Scott, if you can't join us, you can leave us.

Doing English Exercise at Seat

14. 10:30 Scott, just be quiet.
15. 10:32 Doug, sit down--put the dictionary away!
16. 10:32 Tom, did you have permission to talk?
17. 10:35 Scott, until you have permission to talk, please be quiet.
18. 10:37 Pat and Molly! (were not talking)
19. 10:38 Molly, this time it was you.
20. 10:38 Randy--what are you doing (standing at dictionary).
21. 10:38 Scott, if you want to talk, raise your hand!
22. 10:38 Bill, you're not excluded from this!
23. 10:39 Randy--this goes for all of you--I'm going to stand up here and watch. If you want to talk, raise your hand and I'll give you permission.

Selective Verbatim: Elementary Classroom Control

Time	Teacher Statements
8:33	1. Quiet down, please
	2. Mike, settle down.
	3. QUIET!
	4. Now, I want it to be quiet.
	5. Quiet, please.
	6. Quiet, please. I have your tests.
	7. I said quiet please!
8:38	8. Quiet, please!
	9. Quiet, please!
	10. Doug, quiet.
	11. I will not pass out any more tests until this room is quiet.
	12. Allen, quiet, please.
8:43	13. Quiet, please.
	14. Marty, Richard, quiet please.
	15. QUIET! Please. I said there was to be quiet while we were working on these schedules and I meant it.
	16. Richard, please turn around.
8:49	17. Allen, please be quiet.
8:59	18. All right, Richard.
9:05	19. Boys--when that bell rings you are to be at your desk already.

Procedure
Assignment
Return tests
Scheduling

When an observer is able to record extended lecture statements or when equipment is available to record the activity, it is quite useful to analyze these statements using categories such as those that form parts of the formal interaction systems, or those referred to in the analysis of question segment earlier in this section. If student contributions contained the degree of trivia that teacher lectures often contain, or if students tried to generalize without data the way many teachers do when they lecture, most teachers would reprimand them severely.

Careful analysis of directions and assignments given in classrooms and subsequent change of behavior according to the data, the authors hypothesize, would do much to instantly improve the study skills of students. The next example is a transcription of an assignment given to middle school students. It speaks for itself! You will note that, among other things, the teacher gave a direction and criticized students in sequence--it often comes out as "Do this, don't do it." How often is this heard by one of the many inattentive students as " . . . this, don't do it." Similar observations and generalizations can be made about focus statements used by teachers to initiate, redirect, and summarize classroom activities.

Verbatim: Middle School Social Studies

Teacher:

> . . . All right, with these four things on the board we certainly don't have the full picture of this incident as yet, however, it certainly will be developed in the newspapers and in the magazines during the next few days. Especially over the weekend now. Over the weekend, I would want you to do this. First of all today we'll just copy down these four little phrases and follow this incident over the weekend, especially in the Sunday paper there should be a very complete article in the paper on Sunday. And following the (noise in the background) Now just a minute! Let's keep our pens and papers and books away 'til I finish giving the assignment. I want you to follow up the incident, get many of the facts and then first of all perhaps a paragraph or two on these four points and the most important part of the assignment will be this: what do you think of the world opinion of the United States is going to be after the full facts have been known? In other words, will our position be a little bit stronger as a world leader or will we not be so strong as a result of this one particular incident? Now are there any questions on this assignment? Karen?

Change of topic is a problem that became very evident in a recent observation of a social studies class in which the teacher changed the topical focus of the discussion almost every time he asked a question. The data revealed that, in a period of eighteen minutes, the students were asked:

If the economy was bustling?
If Hong Kong had tariffs?
What New York City was like in the late 19th century?
What "political boss" meant?
What can be done about corruption?
What bureaucratic structure is necessary to run a large metropolitan area?
Who was Dave Beck?
What is the use of the Fifth Amendment?
What is the dollar worth today?
How can we use the ballot to get reform?

While it is true that, with some imagination or insight, a reader can deduce a "line of thought" through the discussion, it is also true that the teacher involved did not realize the diversity of topics which he expected his students to discuss. It might be that a discussion is not as successful as a teacher expects it to be not because of the information known, nor the questioning style, nor the thought level, nor the participation, nor the affective interaction, but because of the breadth of topics and the lack of continuity one with another. The authors feel constrained to note that, if the teacher who asked these questions had a rationale leading to a specific objective which demanded such questions, then they could be considered appropriate for the task. However, many teachers assume their sequence of topics is appropriate without ever gathering the data necessary to substantiate that fact.

Analysis of student verbal behaviors. It could be stated as a theorem that students do not question, generalize, hypothesize, inquire, opine, or infer effectively and efficiently as they might unless they receive instruction in these processes. If this assumption is accepted, the authors would further state that teachers cannot provide such instruction unless they have specific persuasive objective data concerning the attainment level of their students in relation to these behaviors. This attitude or belief, if

accepted, would demand that teachers systematically record selected verbal behaviors of their students and develop instructional procedures to augment these behaviors. Inquiry Training as developed by the Northwest Regional Educational Laboratory from work originally done by Richard Suchman at the University of Illinois is an excellent example of materials provided in response to this need. It is a system which teaches students "how to inquire" based upon the continuous input-feedback system implied above. If a teacher's objective is to produce students who can hypothesize, gather data, infer, generalize, evaluate, and apply learned principles, then the teacher must gather data about the students' ability to do these things. One of the means to gather such data is that of selective verbatim discussed above.

In addition, some students or student groups respond differently, sometimes for undetermined reasons, to particular teacher behaviors. If a teacher, by analyzing her behavior and that of her students, could determine optimum means of encouraging different responses, her "power" as a leader of discussions would be dramatically increased.

Task Analysis

Task analysis, also known as "at task," is a widely used and effective technique for gathering data on student behavior in the classroom. The system offers a number of advantages that enhance its value:

1. It is easily modified to fit the needs of a particular data-gathering situation.
2. It provides a simple technique for the collection of data.
3. It yields data that is easily interpreted.
4. It provides data that can be summarized and tabulated quickly.

The purpose of "at task" is to provide information relating to student orientation to assigned or expected tasks in a classroom. In using this system, a teacher or supervisor codes types of expected student behavior, generally numerically, and records this coded student behavior at regular intervals over a given period of time. Three minutes have been found to be

satisfactory as an interval of time, but this interval will vary with the type of activity and the nature of the data sought. The duration of the observation period will also vary, although a twenty- to thirty-minute period will usually provide an adequate sample of classroom behavior.

Coding Student Behavior

In coding behavior, the observer must first determine what student behaviors constitute attention to the prescribed task. This behavior is then interpreted as "at task" and coded numerically, usually as number 1. "At task" is defined as whatever it is that the teacher expects the student to be doing at a given time. As the teacher's expectation changes, the observer's definition of "at task" will change accordingly. For example, during a given time period a teacher may give a reading assignment, then lead a discussion, which might then be followed by an activity such as painting, role playing, or singing. Even though the student's behavior would change, if it changed in accordance with the expectation of the teacher, the observer would code the behavior throughout the observation period as "at task." It is possible, of course, that attention to task might be reflected in more than one type of student behavior at a given time, and the observer may wish to obtain data illustrating each of these behaviors. In such a case the behaviors identified might be coded as 1(a), 1(b) . . . ., or as 1, 2 . . . ., with the coding of behaviors identified as other than "at task" being coded numerically at whatever number follows the last coded "at task" behavior.

It should be remembered that the coding of student behavior is nominal and in no way indicative of the value or comparative ranking of a given type of behavior. It may, indeed, be possible to establish such a ranking based on the interpretation of a given classroom or set of behaviors by a particular observer, but this is the function of the interpretive process and should not be allowed to bias the collection of data. For the purposes of data collection, letters or figures other than numbers would serve as well. Numbers are employed simply because the coding and recording seem to be less difficult when they are used.

To illustrate the coding of student behavior, a hypothetical classroom situation will be considered. In this classroom the teacher is interested in collecting data relating to the student use of independent study time. Using "at task" in its simplest possible form, the observer would classify student behavior as "at task"--working or studying--or as not "at task"--doing something other than the prescribed task--and code these behaviors accordingly as 1 or 2, respectively. This coding, although simple, would provide information regarding how many students were engaged in behavior previously identified as "at task" and for what duration of time. The observer might also determine if "at task" students were distributed throughout the classroom, and if similar behavior was characteristic of friends, of classroom neighbors, or of a group of students with similar abilities.

While a coding of 1 and 2, as described in the preceding paragraph, is adequate for some purposes, the teacher is often interested in what behaviors students are exhibiting when they are not "at task." For example, the teacher might be interested in determining if students are working at other than the prescribed task, talking to neighbors, moving about, seeking help, asking questions, or simply sitting. She might also want to know if a given behavior identified as not "at task" is characteristic of a given group of students or a particular type of classroom activity or setting. For example, does this group of students usually show their lack of orientation to a task by being out of their seats and moving about the room? Or, on the other hand, do they initially demonstrate their lack of orientation by talking to their neighbors and only move about the room after a period of time has elapsed? And yet another example, do the students lose their orientation to music after fifteen minutes, but maintain their orientation to social studies for twenty-five minutes? It would be possible for the reader to substitute "lecture," "discussion," "role playing," or "learning activity package," for the words "music" or "social studies" in this sentence. A sample coding of student behavior, categorizing several types of behavior which the teacher identified for the observer as being other than "at task" might be:

1 - at task
2 - talking to other students
3 - seeking help or asking questions
4 - out of seat, moving about the room
5 - manipulating objects (paper, pencil, etc.)
6 - sitting, gazing, stalling
7 - doing other work

In the above coding, six student behaviors are categorized as one "at task." However, it should be noted that any of these behaviors may be as positive within a classroom situation as those identified as "at task." It is possible, even probable, that a student talking to his neighbor is discussing the task at hand, or that a student moving about the room is in search of materials or assistance relating to the assignment. Even the student who is sitting and gazing may, in fact, be engaged in thinking about a problem created by the assigned task. The primary focus is not what the student is doing, but whether or not his activity is within the limits of teacher expectations. The coding presented in this example was selected to illustrate the nominal nature of the data and to demonstrate the danger of attempting to classify behavior not identified as "at task" as nonproductive--while often this is true, it equally often may not be true.

If the coding system used in collecting data on the hypothetical independent study period is modified even further, it may become possible to distinguish among several student behaviors that are all characteristic of attention to the prescribed task. In this case the coding system might appear as follows:

1 - reading
2 - writing
3 - using reference materials
4 - using audio-visual materials
5 - discussing assignments
6 - talking to other students
7 - out of seat, moving about room
8 - manipulating objects
9 - sitting, gazing

Here there are five behaviors which have been identified as "at task" in combination with four additional student behaviors previously identified as not "at task" but not necessarily nonproductive. In this case, the

observer could record the nature of the "at task" behavior as well as that identified as not "at task."

Caution is indicated at this point. The reader is no doubt aware that by carefully analyzing student behavior, it is possible to break that behavior into a number of components. The more careful the analysis of behavior, therefore, the more categories of behavior there are to be coded. Data generally becomes more valuable as it becomes more specific, but there is a point of diminishing return. If the coding becomes too specific, the recording, tabulation and interpreting of the data will become unduly difficult. In all cases, the observer should prepare for his observation by selecting only those components of behavior that are relevant to the purpose for which the observation is planned--always remaining free, of course, to add a category should a significant one appear.

Recording of Data

It is simplest to record the coded behavior on a diagram representing the seating or activity stations within a room. Using the diagram, the observer records the coded behavior of each student included in the observation (it is possible to collect data on less than an entire class) in the appropriate space. A simple data sheet for a class of twenty students is included as Exhibit I. After recording the behavior of each student, the observer waits until the beginning of the next time interval and repeats the process. This is continued for as many intervals as necessary to obtain an adequate sample of student behavior. It should be remembered that this procedure is essentially a sampling technique and is not intended to provide a complete record of the behavior of an individual student--if that is what is wanted, simply have the observer, or a video-tape camera, watch the individual. Since the observation and recording is a sampling, it is best to standardize the recording sequence by keeping the order of observation and the time interval constant throughout an observation.

In using the data sheet, the observer should record all pertinent information, including the nature of the activity, the time and duration of the lesson, the length of the observation intervals, the time at the

beginning of each interval, and the coding legend. If an observer would be observing the class represented in Exhibit 1, he might begin his observations with the student in the left front station, continue across each row, and finish each interval with the student in the rear right station. This order is arbitrary, and the actual cycle would be determined at the time of the observation by the location of the observer and the nature of the activity being observed. It is best to observe from a position near the front of the room. Exhibit 2 contains a completed data sheet made in the order indicated during an activity and at time intervals as stated thereon.

Interpretation of Data

The primary function of observation is not evaluation. It is to provide a record of behavior over a given period of time. Interpretation, which is a set of inferences based on the recorded data, serves to reconstruct the classroom behavior so that it may be considered in light of the desired objectives. Only at that time can evaluative judgments be made--judgments which should reflect the success or failure of reaching the desired outcomes. It is the teacher who should be primarily responsible for making whatever evaluative judgments are made, since, in reality, it is only the teacher who can change her own behavior.

EXHIBIT 1

DATA SHEET: AT TASK ANALYSIS

Teacher _____

Date _____

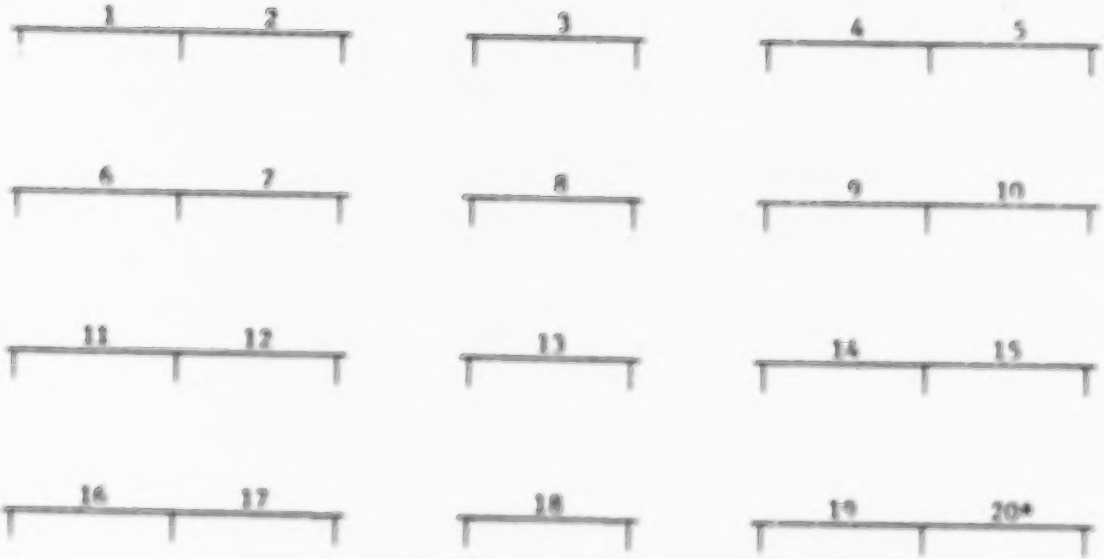
Activity _____

Time of Observation _____

Observation Interval _____

Intervals	
No.	Time
1	
2	
3	
4	
5	
6	
7	
8	

Code
1
2
3
4
5
6
7
8



*Numbers indicate a possible observation sequence.

EXHIBIT 2

DATA SHEET: AT TASK ANALYSIS

Teacher Smith

Date 2/4/70

Activity Study period

Time of Observation 1:00

Observation Interval 3 min.

Intervals	
No.	Time
1.	1:00
2.	1:03
3.	1:06
4.	1:10
5.	1:13
6.	1:16
7.	1:19
8.	1:23

Code

1. Reading assignment
2. Writing
3. Using reference materials
4. Using audio-visual materials
5. Discussing assignment
6. Talking to other students
7. Out of seat
8. Manipulating objects
9. Sitting, gazing

(1:00)6	(1:13)2	6	2
(1:03)1	(1:16)6	4	8
(1:06)4	(1:19)6	4	8
(1:10)4	(1:23)9	2	2

1	3		
3	3		
3	9		
3	2		

8	3	1	3
1	3	2	5
5	2	2	5
5	8	3	3

1	7	6	2
1	7	6	1
7	2	1	1
7	2	2	2

1	1		
1	3		
1	3		
1	2		

1	6	1	3
4	4	3	2
4	6	3	6
4	2	6	2

1	3	9	1
2	3	8	8
1	3	8	7
1	3	1	7

1	1		
9	7		
9	3		
1	3		

5	2	5	6
1	3	1	4
2	2	1	6
2	2	2	4

5	2	5	1
4	2	6	1
4	1	9	8
7	2	9	9

1	1		
6	9		
1	2		
8	2		

2	3	2	2
2	2	3	4
2	2	3	2
3	3	2	2

After an observer has compiled some data, it needs to be tabulated and grouped so as to facilitate the interpretation process. In Exhibit 1, the reader will note the grouping and tabulating done after an observation of a class of twenty-eight students during a lesson which demanded that they do art work at their seats. Notice that this observer coded behaviors by letter rather than numbers, and that the observation intervals varied from four to six minutes. A teacher's interpretation of these data would be in relation to the student behavior objectives she had for the period. If her students were free to work on other assignments, even though their art work was incomplete, the "other work" category would not bother her. If she expected that students would need the entire period to complete the work, she might be concerned about the ten to fourteen students who were not "at task" after 11:06--closer examination of the original data would be necessary to determine if these were the same students at each observation interval. The teacher, also, might be concerned--if so, she would gather some data--about her directions, since it took fourteen minutes for everyone to get started at the task, and that at no time was everyone "at task." The proper treatment of these data would result in the teacher hypothesizing about ways to minimize that data she regards as negative and maximize that which she regards as positive--few, if any, conclusions can be drawn about a teacher from one collection of "at task" data.

EXHIBIT 3

AT TASK: SUMMARY DATA SHEET

	10:40	10:44	10:48	10:52	10:54	10:58	11:02	11:06	11:10	11:14
At Task	17	21	21	22	23	23	21	18	19	16
Stalling	5	2	2	1	--	--	--	--	--	--
Other Work (Productive)	2	1	1	1	1	--	--	--	--	--
Out of Seat	1	3	3	2	1	5	5	3	4	4
Talking	3	1	1	3	3	--	2	6	3	7
Other Work (Non-productive)	--	--	--	--	--	--	--	--	1	3

Coded Behavior	High	Low	Mode
A - At Task	23	16	21
B - Stalling	5	0	0
C - Other Work (Productive)	2	0	1
D - Out of Seat	5	1	3
E - Talking	7	0	3
F - Other Work (Nonproductive)	3	0	0
B-F - Total Not at Task	14	5	7

Pattern Analysis

Teachers and students are in constant interaction with the physical, social, and cognitive environment of the classroom. Often this interaction can be described as a series of patterns of verbal or physical behaviors that occur in relation to certain class activities. Analysis of these behaviors may be critical to the development of a thorough understanding of the role of teachers and students in the classroom.

In this section, attention will be given to patterns of behavior relating to the distribution and nature of verbal behavior and to the pattern of teacher and pupil movement within the classroom. The techniques presented are not exhaustive, but do provide a basis for the analysis of a particular dimension of classroom interaction.

Analysis of Classroom Discussion

Formal systems of interaction analysis mentioned earlier are designed to yield data relating to specific affective or cognitive dimensions of classroom activities. These techniques are effective in providing a particular type of data, but none is designed to provide information about the distribution, degree (other than total time), or pattern of individual student participation. The analysis of these dimensions of classroom interaction necessitates additional information which may be provided by a variety of data-gathering techniques. It becomes the task of the observer to determine which data are needed and to select the appropriate technique for collecting data.

In addition to data relating to student participation in class discussions, there is a need for information concerning the nature of the discussion. Factors such as initiation, orientation, and accuracy of teacher and student participation may all be important to the analysis of the total activity.

At the moment, no existing formal system of discussion analysis provides information relative to which students are talking, how often they talk, in what sequence they participate, or what was the nature of their

talk. All formal systems currently in vogue make general summary statements about "the students." Since learning is an individual activity and does not happen to a group, a thorough analysis of classroom interaction must include data concerning individual student behaviors.

Sequence of Participation

What is the sequence of the "typical" discussion of a teacher? If "T" represents the teacher and "S" represents the students, does the discussion follow a T-S-T-S-T-S pattern, or a $T\text{-}S_1\text{-}S_2\text{-}S_1\text{-}S_2\text{-}T\text{-}S_1\text{-}S_2\text{-}S_1\text{-}S_2\text{-}T$ pattern or maybe a $T\text{-}S_1\text{-}S_2\text{-}S_3\text{-}S_4\text{-}S_5\text{-}T\text{-}S_1\text{-}S_2\text{-}S_3\text{-}S_4\text{-}S_5\text{-}T$, or maybe a pattern that combines all of these. Any and all verbal patterns may contribute to effective learning on the part of the students. It can be hypothesized, however, that there are optimum patterns for a particular topic, a particular instructional strategy. If this is the case, it is incumbent upon the teacher to gather such data in her own classroom and act upon it. At the very least, problems often result when the teacher unwittingly uses the same pattern daily or relies on the same students continuously. The important criteria to be used in examining any data of this sort must be the sequence originally hypothesized as optimum by the teacher--if the teacher expected one sequence and got another, then either her rationale needs examining or the classroom behavior needs changing.

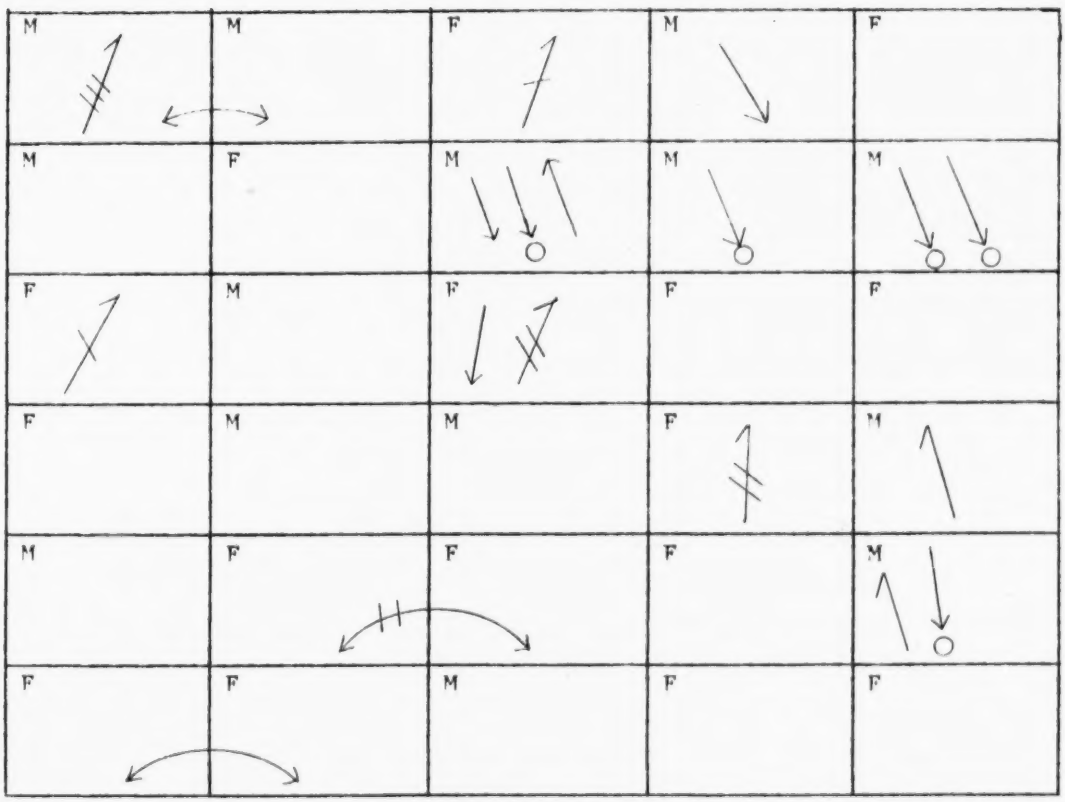
It should be obvious that the observer needs only to record the code (T, S, S, etc.) representative of the person speaking. However, the use of student name, if known, can make the data more valuable. If names are not available, the observer may simply record the participation on a seating chart by placing numbers in sequence on the chart.

When an observer wants to collect specific information about the characteristics of responses, he may record on a diagram of the seating assignments, using an appropriate legend data such as who is speaking, who initiated the talk, the accuracy of the data, etc. Using the legend below, a recent twenty-minute observation yielded the data shown in Exhibit 4.

EXHIBIT 4

DISCUSSION PATTERN

-Front-



Legend:

M Male

F Female

Student emitted response (volunteered)

Student elicited response (called for by teacher)

Student elicited response--inappropriate

Question asked by student

Student - student talk, inappropriate

Marks such as may be used to indicate repeated verbal behavior. For example, may indicate a single contribution and may indicate two responses, may indicate three responses, etc.

The data contained in Exhibit 4 could be summarized in the following manner:

1. 25 responses were made during the observation period by 11 students.
2. 16 responses were volunteered student responses.
3. 8 responses were elicited with 5 of the 8 being inappropriate (probably in the form of incorrect answers to teacher questions).
4. 1 question was asked by a student.
5. On 5 occasions students talked to each other for inappropriate reasons.
6. 19 students did not participate in the discussion.
7. 76% of the responses came from the front half of the room and 56% of the responses were by boys.
8. All but one (7 of 8) of the elicited responses were by a boy.
9. Participation was inequally distributed in the room with the majority of responses occuring in the front, right portion of the room.

After reviewing the above analysis of data, the teacher may want to modify teaching behavior in order to involve more students in the discussion, to distribute the responses more evenly about the room, to involve girls more directly, or to ask more questions. The actual decisions the teacher would make would, of course, depend on what the objectives for the lesson had been initially.

It is not being suggested that data such as that presented above, based on a single twenty-minute observation, should become the basis for a dramatic change in teacher behavior. However, should this data be found to be consistent over several observations of this class or this teacher, some changes in behavior might be indicated.

Other Applications of Pattern Analysis of Discussion

Patterns of discussion other than those relating to participation may become evident during the course of an observation period. The way in which verbal interaction is characteristically initiated and the orientation, or lack of orientation, may directly influence the achievement of a given set of objectives.

In most discussion sessions, the teacher is responsible for initiating a sequence of verbal interactions involving the teacher and one or more students. As one set of interactions is completed, the teacher typically

initiates a new sequence and then continues this pattern for the duration of the discussion period. This phenomenon has been described by Bellack, who, through a series of observations, was able to develop what he referred to as rules of classroom interaction. These rules were not meant as "rules to follow," as in a game, but as "rules" based upon the way interaction does occur in the classroom. Other observers have also determined that a most important factor in classroom interaction is the manner in which the teacher initiates such interaction. As such, it can be seen that data relating to initiation of verbal interaction is important in assessment of the total interaction in the classroom.

Since timing of verbal behavior can be important to classroom interaction, an observer might find it valuable to record the time at which each episode of verbal behaviors is initiated, and the duration of each episode (Smith defines an episode as a series of verbal exchanges dealing with a particular idea). The teacher may discover that new ideas are being introduced at a rate that may not allow for sufficient attention to each one; or, she may find that extended interaction is limiting a desired rate in input of information. The relationship of time, interval, and frequency of verbal behaviors to such dimensions as topic, teacher objective, origin of ideas, characteristics of participants, teacher and student motives, and others, may also be of value in the analysis of discussion. Certainly, a single factor of timing, such as pace, will have a profound influence upon the nature of a discussion and the corresponding attainment of teacher objectives.

The role of the student in the initiation of classroom interaction is also important in discussion analysis. Many of the factors discussed above, in relation to the teacher's role in class discussion, are appropriate in considering the student role. As emphasis on student participation in learning activities continues to increase in professional circles, there is a corresponding need to gather information relating to this participation.

Another dimension of class discussion relating to patterns and important for both teacher and student is the location of verbal activity,

especially that verbal behavior which serves to initiate a related sequence of interactions. Reference to Exhibit 4 will illustrate this point: In this example, most (76 percent) of the verbal behavior was directed to, or came from, the front part of the room, with 86 percent of the behavior involving only seven boys who comprised 23 percent of the class. It is quite obvious that a teacher attempting to involve an entire class in a discussion would not be satisfied with the above data. How often is it heard that, "Class discussion would be fun but the teacher never calls on me." While it is granted that participation is the student's responsibility as much as it is the teacher's, awareness on the part of the teacher would certainly enhance the general effectiveness of the discussion period. A consideration of to whom verbal behavior is directed, at what time, in what order, and under what conditions is valuable as it relates to both teachers and students.

Students are aware of the nature of verbal behavior directed toward them by the teacher. This awareness, at times, affects a positive or negative pattern of reinforcement. It is a role of the teacher to affect this pattern of reinforcement in such a way that it yields a maximum of positive reward. This is largely accomplished through skillful timing and directing of teacher verbal behavior, and through careful assessment, encouragement, and utilization of student behavior.

Classroom Movement Patterns

If an observer was interested in the physical movement of either students or teachers, he could easily devise a system which would provide him with data on this topic. For example, during an independent study period, which students use what learning centers? Which leave the room? Which confer with the teachers or aides? Or which ones are moving about the rooms at certain "critical periods"? Or, on the other hand, the observer might be interested in a teacher's movement in relation to other adults, individual students, resources, space and materials, or her objectives. Teachers often claim to intuitively know who "bothers" them during study periods, who needs no assistance, who is "always out of his

seat," or which classroom resource centers are frequented. It behooves every teacher to periodically gather some specific data to ascertain the accuracy of these hunches. Using a diagram of the classroom, an observer using lines, checks, dots, numbers, and other symbols can trace the movement of teachers and individuals.

Prior to a recent observation, a teacher indicated that she was concerned with students gathering around her desk during work periods. It was decided by the observer to monitor the movement of the teacher to determine if her movement patterns were related to her concern about students congregating at the teacher's desk. The observer elected to record the location of the teacher in the room every three minutes for the duration of the observation. This location was indicated by a series of numbers (encircled) with number 1 indicating the teacher's location at the beginning of the first three-minute interval and number 10 indicating the teacher's position at the beginning of the last three-minute interval. Also recorded was the number of students at the teacher's desk at the beginning of each three-minute interval. The data collected, which is presented in Exhibit 5, was quite enlightening. While caution must always be exercised in drawing inferences from only a single observation, it seems evident from this bit of data that students are gathering at the teacher's desk because that is where the teacher is most of the time. Based on this data (and other observations), the teacher made a decision to spend less time at her desk and more time moving about the room and attained positive results in regard to this particular problem.

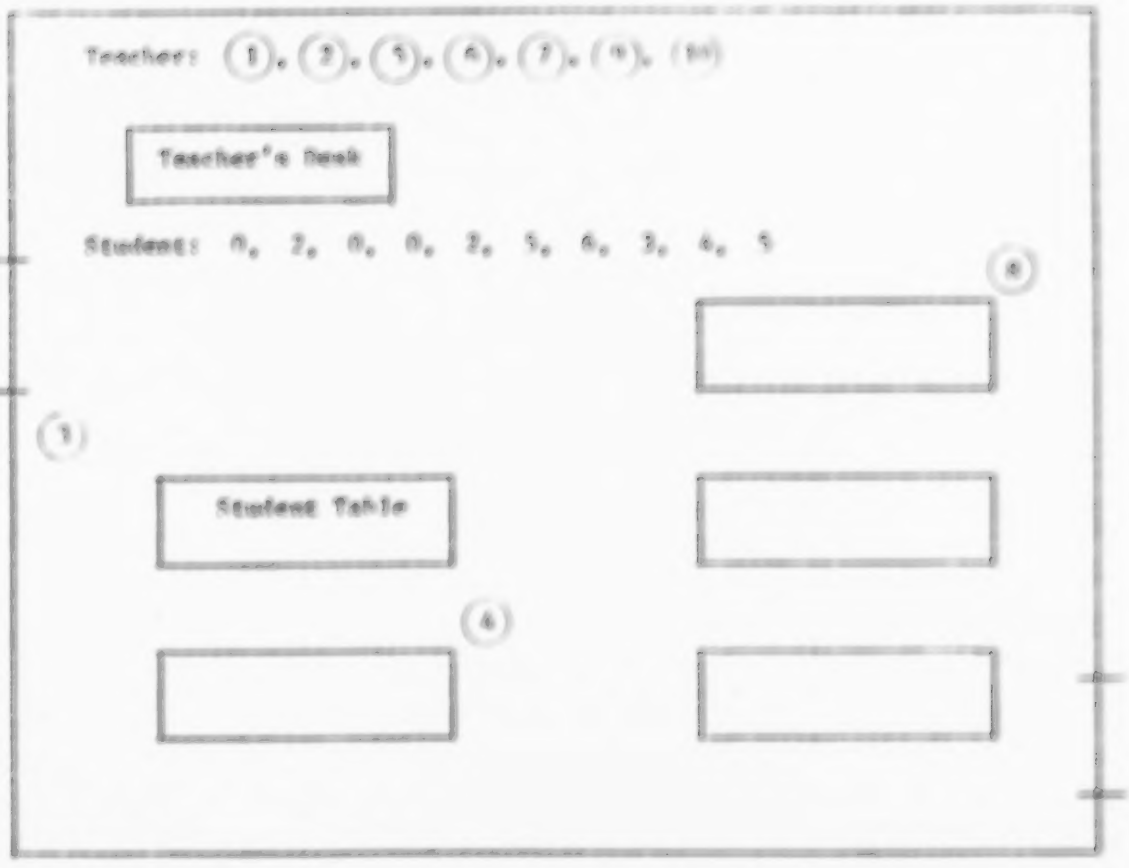
Summary

A number of techniques for collecting a variety of different types of information within the context of the ongoing class have been described in this section. These techniques all have in common a simplicity or lack of sophistication that in itself tends to make them effective. They yield a maximum of data with a minimum of expertise on the part of the observer. Unlike most formal systems, which require many hours of practice to develop

the skill necessary in application, these systems require only that the observer identify the nature of the data desired and select an appropriate technique. Experience in the use of these techniques increases efficiency in the recording and interpretation of the data but is not prerequisite to their successful application. The critical factor is not the skill of the observer in recording data, but the ability of the observer and teacher to identify objectives, agree on definitions, and select techniques capable of yielding data.

FIGURE 1

TEACHER MOVEMENT



APPENDIX

Bloom's Taxonomy of Educational Objectives, Cognitive Domain

I. KNOWLEDGE

A. Emphasizes remembering by recall or recognition; should not be too different from way in which knowledge was originally learned.

B. Behavioral Terms
1. Defines
2. Recalls
3. Lists
4. Recognizes

II. COMPREHENSION

A. Emphasizes a grasping of the meaning of the material; deals with content.

B. Involves the ability to interpret or translate from abstract to simple phrases or a generalization.

C. Behavioral Terms
1. States in own words. . . .
2. Gives an example of. . . .
3. Illustrates. . . .
4. Generalizes. . . .
5. Summarizes. . . .
6. Interprets. . . .

III. APPLICATION

A. Applies what is remembered and comprehended.

B. Applies learning to real life problems.

C. Behavioral Terms
1. Chooses appropriate procedure. . . .
2. Applies a principle. . . .
3. Uses an approach. . . .
4. Identifies the solution. . . .

IV. ANALYSIS

A. Breaks material into constituent parts and detects relationship of the parts to each other and to the whole.

B. Distinguishes fact from hypothesis and from value statements.

C. Identifies conclusions and generalizations.

D. Recognizes relevance from trivia.

F. Differentiates one symbol from another symbol.

G. Behavioral Tasks
1. Analyzes
2. Identifies
3. Discriminates between
4. Discovers
5. Detects

V. SYNTHESIS

A. Learner may exhibit creative behavior.

B. Combinations originality.

C. Organizes ideas into new patterns.

D. Tries various approaches.

E. Example: Ability to plan a unit for a particular situation or develop a personal theory.

F. Ability to use results of research to solving a problem.

G. Behavioral Tasks
1. Develops a plan. . . .
2. Writes an essay. . . .
3. Makes up a story. . . .
4. Designs a machine. . . .

VI. EVALUATION

A. Makes a judgment concerning the value of ideas, principles, methods, solutions, etc.

B. Uses criteria.

C. May precede accepting new knowledge or ideas at any other level.

D. Uses opinions.

E. Develops foundations for making judgment.

F. Recognizes fallacies.

G. Behavioral Tasks
1. Compares. . . .
2. Judges . . . and supports. . . .
3. Determines the best possible. . . .
4. Applies criteria. . . .

REPRINTS AVAILABLE FROM
THE OREGON SCHOOL STUDY COUNCIL

Author	Title, Volume, Number, and Date	Price
Wesson, Arthur	The Use of Tests in Instruction, Vol. 11, No. 1; September, 1971	[illegible]
[illegible] McDermaid, and Wallington County School Administrators	Policies, Procedures, and Procedures for Public Schools, Vol. 11, No. 1; October, 1971	[illegible]
Fowler, Glenn W.	A Cost-Effectiveness Study of Employing Nonprofessional Teaching Aides in the Public Schools, Vol. 11, No. 1; November, 1971	$2.50
Nelson, Norman	Vandalism in Schools: A 200 Million Dollar Problem, Vol. 11, No. 1; December, 1971	$2.00
Bernard, John P.	Extending the Scope of the School: Considerations for Developing the School Year, Vol. 11, No. 1; January, 1972	$2.50
Shaw, Gerald E.	The Elementary School Principal in Inservice Advisor, Vol. 11, No. 1; February, 1972	$2.50
Hutchison, Charles W.	Classified School Employees: Factors Influencing Their Attitudes Toward Work, Vol. 11, No. 1; April, 1972	$2.50
Rogers, Jesse	An Evaluative Study of a Continuation High School, Vol. 11, No. 1; May, 1972	$2.50
Conrad, Charles W. Fuller, Mack	Individualized Instruction in Math at El Capitan High School, Vol. 11, No. 1; June, 1972	$2.00